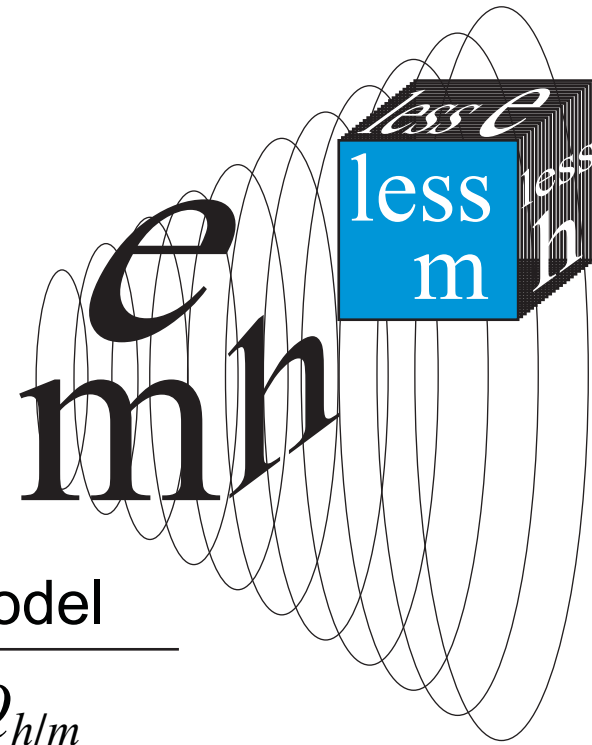


Model of Thresholds and Ratios

Equations for experiments famous for wave-particle duality have ratios

h/m , e/m , e/h .

Ratios and thresholding can replace quantization.



	Quantum Mechanics	Threshold Model
Matter wavelength	$\lambda_{\text{phase}} = \frac{h}{m\sigma}$	$\lambda_{\text{group}} = \frac{Q_{h/m}}{\sigma_{\text{group}}}$
Photoelectric	$h\nu_L - h\nu_0 = \frac{m\sigma^2}{2} = eV_0$	$Q_{h/m}(\nu - \nu_0) = \frac{\sigma_{\text{group}}^2}{2} = Q_{e/m}V_0$
Compton	$\Delta\lambda = \frac{h(1 - \cos\theta)}{mc}$	$\Delta\lambda_{\text{group}} = Q_{h/m} \frac{1 - \cos\theta}{c}$
Lorentz force	$F = ma = e(\sigma \times B)$	$a = Q_{e/m}(\sigma_{\text{group}} \times B)$
Aharonov-Bohm	$\Delta x = \frac{eL\lambda Bw}{h}$	$\Delta x = Q_{e/h} L\lambda_{\text{group}} Bw$
Boltzman	$\frac{h\nu}{kt} \propto \frac{h\nu}{m\sigma^2 t} = \frac{Q_{h/k}\nu}{\sigma^2 t}$	

Other equations with odd ratios of these constants are not about spreading waves.